

The Waltz of Condensate Droplets on Lubricated Surfaces

Infuse a nanostructured surface with a thin oil-film, and now you have prepared a dance floor for droplets to waltz on! We recently discovered when droplets condense on lubricated surfaces, they spontaneously dance in serpentine, self-avoiding fashions (left), before switching to circling motions, like whirling dervishes in a trance (right, bottom). The driving force behind this dance is the Cheerios effect, the conversion of interfacial into kinetic energy. As larger droplets gobble up their smaller neighbors, they leave fresh areas for re-condensation and rebirth of new drops which start their own dance routines in a captivating ballet of renewal. These dancing droplets can revolutionize the way we capture water from the atmosphere, with potentially important heat-transfer applications.

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